

3-4 Assignment: Perpendicular Lines

1. HJ ; $x > 7$
2. UT ; $x < 17$
- 3.

Statements	Reasons
1. a. $m \perp n$	1. Given
2. b. $m\angle 1 = 90^\circ$, $m\angle 2 = 90^\circ$	2. Def. of \perp
3. $\angle 1 \cong \angle 2$	3. c. Def. of $\cong \angle$
4. $m\angle 1 + m\angle 2 = 180^\circ$	4. Add. Prop. of =
5. d. $\angle 1$ and $\angle 2$ are a linear pair.	5. Def. of linear pair

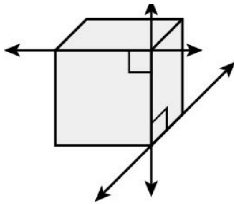
4.
All the borders are straight lines, and the Colorado–Utah border is a transversal to the Colorado–Wyoming and the Colorado–New Mexico borders. Because the transversal is perpendicular to both borders, the borders must be parallel.

5. A
6. H
- 7.

It is given that $\overline{QR} \perp \overline{PQ}$ and $\overline{PQ} \parallel \overline{RS}$, so $\overline{QR} \perp \overline{RS}$ by the \perp Transv. Thm. It is given that $\overline{PS} \parallel \overline{QR}$. Since $\overline{QR} \perp \overline{RS}$, $\overline{PS} \perp \overline{RS}$ by the \perp Transv. Thm.

8.
It is given that $\overline{PS} \parallel \overline{QR}$ and $\overline{QR} \perp \overline{PQ}$. So $\overline{PQ} \perp \overline{PS}$ by the \perp Transv. Thm.

- 9.



10.
The rungs of the ladder are lines that are all \perp to the same line, a side of the ladder, so the rungs must be \parallel .
11. $m\angle 1 = 135^\circ$
- 12.

Label the \cong $\angle 1$ and $\angle 2$. By def. of \cong ,
 $m\angle 1 = m\angle 2$. By the Lin. Pair Thm.,
 $m\angle 1 + m\angle 2 = 180^\circ$. By subst., $2(m\angle 1) = 180^\circ$. By
the Div. Prop. of $=$, $m\angle 1 = 90^\circ$, so the lines are \perp
by the def. of \perp lines.

13.

Label a pair of corr. rt. $\angle 1$ and $\angle 2$. By the Rt. $\angle \cong$
Thm., $\angle 1 \cong \angle 2$. So $r \parallel s$ by the Conv. of the Corr. \angle
Post.